



EDU 2011 Mobile Learning Pilot Interim Report
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1. Project Benefits

- a. A description of how the wireless devices were integrated into the project's curriculum and objectives (including approximately how many times per week the wireless devices were used to access remotely and how many wireless devices were used during this period).**

The Mohican Outdoor School Mobile Learning Pilot differs in a number of ways from the majority of other projects funded under this initiative. Mohican Outdoor School provides outdoor resident education, in our rural, Butler, Ohio location, to students from a variety of locations and schools located throughout the state. As a result the student population is always dynamic and time spent at the location varies. The introduction of the Green Tech Mobile Learning Program (GT Mobile) was designed to provide opportunities for students and teachers to make realistic connections in the field to academic principles taught in the classroom. Additionally, a key goal was to expand the environmental education experience so participants could engage in web based lessons regardless of their location. A strong emphasis is placed on citizen science, or the use of students to assist with data collection in the field in areas such as surface temperature, water analysis, and other environmental issues. Additionally, the goal is to use this pilot project to leverage additional funds that will fund the development of web based environmental education lessons and conservation activities that will contribute to a healthier and longer lasting planet Earth.

There are three main areas of mobile learning integration in the Mohican Outdoor School curriculum.

1. Global Learning and Observation to Benefit the Environment (GLOBE)
 - Students take surface temperatures using an infrared radiant thermometer (IRT) and record data to netbooks.
 - Information is sent to the GLOBE database to be included in NASA and NOAA studies pertaining to climate change.
 - GPS Technology is utilized to record readings at exact locations
2. Scenic Rivers Stream Quality Monitoring (SQM)
 - Macro-invertebrate collection is completed on streams and rivers identified in the Scenic Rivers Program. Specimens are surveyed to assess type and quantity and then released.
 - Macro-invertebrates are highly effective indicators of a rivers health.
 - Quantity and diversity of specimens can indicate changes and problems with water quality.
 - Netbooks are used to assist in the identification of specimen type and to record collected data.
 - Data is sent to state to be compiled in database.
3. Natural Cache Program
 - Integrate netbook use into Ohio EPA funded Natural Cache Program.
 - Natural Cache utilizes GPS technology to navigate between conservation based activity stations.
 - Station lessons are based on soil, water, energy, plant, weather and wildlife. Lessons are being loaded to netbooks and students will follow lesson steps utilizing netbooks in the field.

To date, 41 students have utilized the netbooks and we anticipate use to climb from this point as filtering and funding issues have been resolved. Little progress has been made in integrating the handheld devices due to lack of suitable filtering, outdated platform (from the day we received them), and poor advice from the vendor.

- b. If available, a detailed summary of any data collected by the school or library on the project's outcomes and achievement of the project's goals, including usage of educational and research resources by students and patrons and number of devices actually used.**

Unfortunately, Mohican Outdoor School has not had time to record sufficient and reliable data as we are just now fully integrating the use of our netbooks, and our handheld devices are not yet functional. A variety of issues have slowed the process of implementation with the most critical being the delay in funding approval. Mohican Outdoor School is a very small program that operates on very limited funding. While we purchased our learning devices in July at the insistence of our Sprint Sales Representative (He indicated that there were three projects funded in Ohio that were teaming with Sprint and that if we didn't order the accounts at that time that we may not get devices because there would probably not be

enough available later) we did not receive commitment on our funding until November 28, 2011. In hindsight, we should have waited for the funding approval before purchasing, as we were unable to do anything with the machines until the board received written approval for the funds. By the time we received approval we were in the midst of holiday seasons of Thanksgiving, Christmas and New Year. Additionally, issues associated with filtering and the handheld learning devices (smartphones) continue to contribute to challenges in implementation. A more detailed explanation on the barriers associated with implementing this program can be found in the lesson learned section of this report.

Even with the challenges and the shortened time frame we are pleased to report some progress toward our goals. Progress is reported under the following goals in bulleted point format:

1. By June 30, 2012, at least 25 teachers will receive training on how to incorporate mobile learning technology into student lessons designed to be taught in the outdoors resulting in a 20% increase in the delivery of lessons via handheld computers to students in the field.
 - At least 5 MOS teachers have been trained so far in the use of mobile lessons delivered using Edmodo.
 - One remote teacher has committed to integrating web delivered lessons to her class and that pilot is in progress.
2. By June 30, 2012, at least 750 students in grades 5 and 6 will complete experiential thematic lessons on environmental science delivered with the assistance of mobile learning technology.
 - 21 students are participating in an off site GLOBE project which incorporated the use of the netbooks.
 - After much challenge a suitable filtering device has been purchased and is installed on half of the netbooks with the remainder to be completed within two weeks. A filtering device is still needed for the smartphones.
 - Experiential lessons have been designed and are in place for our GPS program called Natural Cache. We are now loading those lessons to the netbooks and will soon incorporate their use in the field with the Natural Cache program.
3. By June 30, 2012, students completing GT Mobile lessons will demonstrate a 20% increase in pre-test/ post-test scores.
 - No pre-test/ post-test has been initiated as yet, however, student internet access surveys are being completed and data is reported at the end of this section.
4. By June 30, 2012, at least 3 months of water sampling data will be recorded via the use of portable wireless student devices.
 - We will resume water sampling in the spring but web based forms are now in place for collecting data electronically when activity resumes.
5. By June 30, 2012, a minimum of 75 lessons will be delivered via a mobile learning platform such as Go Know.

- We have opted not to use the Go Know platform and are temporarily using a free web-based platform to deliver lessons. Lessons are in design and being tested by instructors and staff.

c. If available, a copy of any results or summary of the results of any survey given to the students, teachers, parents or library patrons to assess any aspects of the off-premises wireless project

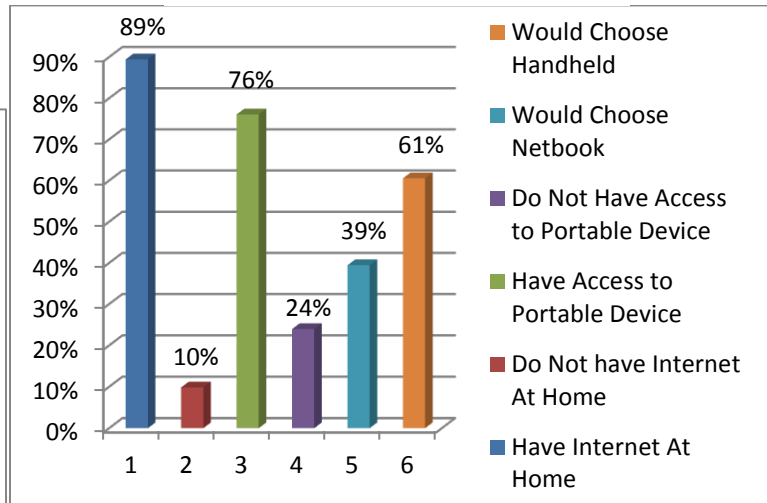
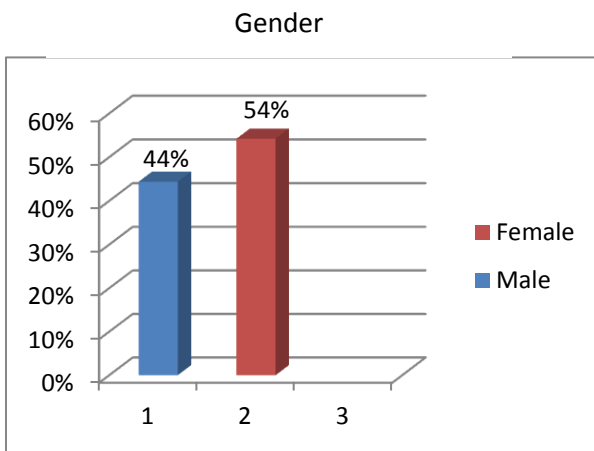
Data Collected Regarding Student Internet Access at Home

We are presently surveying students as to their access to internet connectivity at home. To date 142 students have completed the survey. The survey consists of 7 questions. In summary, the questions elicit the following information:

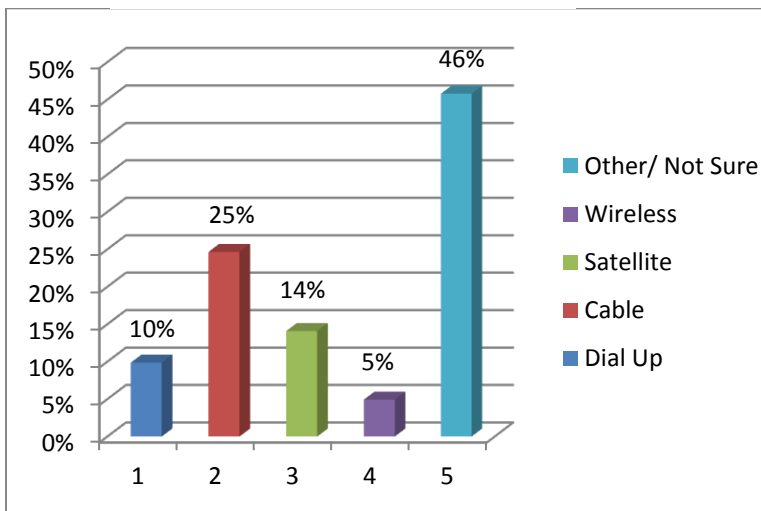
- Gender
- Internet access at home and type of internet access if available
- Frequency that internet is used to assist with homework
- Availability of portable internet connected device (netbook, tablet, laptop, Smartphone, etc)
- Use of internet outdoors
- Preference of choice of netbook verses handheld learning device (smartphone without phone capabilities)

The graphs on the next page illustrate data collected on surveys completed by students.

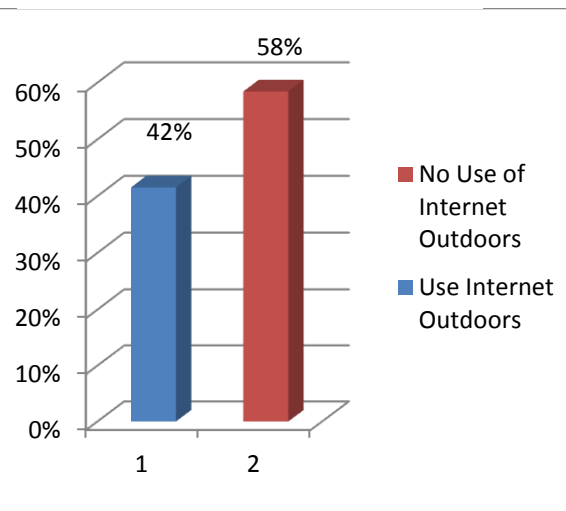
Internet Access Information



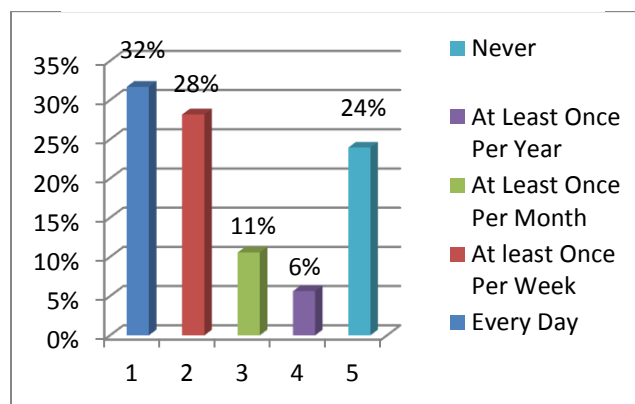
Type of Internet Access in Home



Internet Use Outdoors



Use Internet to Help with Homework



2. Project Costs

a. Provide an analysis of per student or patron cost of the off premise connectivity.

As mentioned earlier and in more detail in the “Lessons Learned Section”, Green Tech Mobile just recently began implementation. In Mohican’s case, as students are rotating through the school on a regular basis we would request permission to count as the library counts patrons as it makes sense for us to do it that way. At present, 41 students have utilized the netbooks.

Our projected costs for this proposal are as follows:

Requested E-Rate Pre Discount	\$29,604
Match and committed funds	\$11,500
Total Cost of Program	\$41,104
Adjusted Anticipated number Served	435
(Adjusted for late receipt of funds- 750 original students less 5 five months @ 63 students per month)	
Per pupil cost before discount including match	\$94.00
Eligible E-rate discount funding:	\$23,683
E-rate share of cost per pupil	\$54
(23,683 divided by 435 students)	

3. Effectiveness of Protective Measures

a. A detailed description of the measures, including specific software or filtering mechanisms that were taken to ensure compliance with Children’s Internet Protection Act as well as a description of measures to protect against waste, fraud and abuse.

After several attempts to locate a suitable and cost effective method of filtering, Mohican Outdoor School has purchased Web Watcher Software provided by Arnett Technologies to monitor netbook use. As each machine is independently connected via WIFI provided by Sprint, this software is installed individually on each netbook. This process takes a considerable amount of time. Initially, we hoped to filter all machines through our network firewall but independent installation turned out to be more cost effective and less complicated. In hindsight, applicants, especially small applicants with limited IT support and allocated funding should exercise due diligence in planning for filtering. This has been one of the most complicated, expensive, time consuming aspects of program rollout. This was further complicated by the fact that our Sprint representative told us at the time of purchase that the cost of filtering software would be e-rate eligible. It was not until several months later when we actually received funding approval that we realized this was not true. Unfortunately, the software that our Sprint representative originally suggested then became unaffordable and we were forced to find an alternative. The original software would have been a suitable filter for both the netbooks and the smartphones. The alternative selected does not work on the phones and so we are still struggling with filtering the handheld devices which have not yet been integrated due to this challenge. Fraud and abuse of devices is minimized in our program as the devices are returned to the facility on a regular basis and do not remain indefinitely in the student possession.

4. Lessons Learned

- a. A description of any technical, operational, or administrative problems or issues associated with implementing the project (such as barriers in using the wireless devices or difficulties with the service) and a description of how those issues were addressed or are being addressed.**

In hindsight, this project was a very aggressive endeavor for a small program with limited technology support. A full year of planning should be dedicated to this program before making application for funds. Filtering seems as though it would be easily accomplished when in fact it can become very complicated, expensive and time consuming. The use of handheld devices (smartphone technology) has proven to be much more difficult to implement than the use of netbooks. We are still pursuing cost effective solutions to accomplish the filtering of our handheld devices. Time is critical in the delivery of service and any delay in funding or infrastructure development can create a barrier to success. We have also come to realize that students and staff may be adept at surfing the web, but this does not make them technologically competent. As a result, training time is critical to program success.

- b. A narrative of the lessons learned as a result of the off-premise wireless project (for example, based on what you learned from the project, how would you plan and implement your project differently if you were doing it over again?).**

If able to implement this project over again, Mohican Outdoor School would take a full year of planning which would include teaming up with a non-formal school that has engaged in this effort. Additionally, we would scrutinize vendor recommendations in greater detail as we really did receive some inaccurate information in this area. Following is a summary of lessons learned:

1. Time-MOS did not receive our award letter until November 28, 2011. Because we operate a small tight budget we were not able to invest additional time, or funds in the program until we were sure we were approved.
2. Connection- Presently the only existing option for internet connection is wireless and there is only one company (Sprint) providing adequate coverage in our area. While this is better than satellite, it is still not great.
3. Rugged, rural environment- While we are very remote and our only internet connection is satellite or Sprint wireless, we are still considered urban by the federal classification for e-rate which reduces our reimbursement.
4. Staff Training—we realize now that it takes time and costs money to train staff and that no assumptions should be made regarding technical competence.
5. Filtering—it is challenging to find cost effective means of filtering especially for the handheld devices as previously discussed; filtering is not easy.
6. Delivery—more time should be spent selecting a viable web platform to deliver lessons as we initially wasted time on a non-suitable platform.
7. Technology support—we are very much “learning on the go” as we do not paid IT staff so the learning curve is extended. With this being said, it creates hope knowing that investment is being made in smaller programs such as ours as well as large public school systems, to affect the digital/ technological divide that truly exists in our nation.